CLAIMS

1. An optical pickup which carries out tracking by three beams with respect to an optical disc, the optical pickup comprising:

a one-packaged light source for emitting a light beam having a first wavelength and a light beam having a second wavelength;

a grating for splitting a light beam, emitted from the one-packaged light source, into a main beam and two sub-beams;

an objective lens for focusing the main beam and the sub-beams on the optical disc; and

a photodetector for detecting push-pull signals from respective light, of the main beam and the sub-beams, reflected by the optical disc,

the grating including first and second regions through which the light beams, having first and second wavelengths, respectively, pass, each of the regions including a region having diffraction grooves whose concavoconvex pitches are partially shifted so that a pattern is provided to cause each of the first and second light beams to have a partial phase shift, and

the pattern being set so that amplitudes of the push-pull signals of the sub-beams are substantially cancelled in each of the light beams having different

wavelengths.

2. The optical pickup as set forth in claim 1, wherein:

the first region is inside the second region on the grating, the first and second regions contributing to a tracking signal detection;

the pattern causing the partial phase shift includes a first phase shift pattern and a second phase shift pattern which are formed substantially parallel to a track;

the first phase shift pattern is provided so as to include part of the first region and part of the second region; and

the second phase shift pattern is provided so as to include only part of the second region.

3. The optical pickup as set forth in claim 2, wherein a pattern causing the light beam having the first wavelength to have the phase shift and a pattern causing the light beam having the second wavelength to have the phase shift are formed on one side of a boundary which passes through centers of the light beams passing through the grating and is substantially parallel to a track direction of the optical disc.

4. The optical pickup as set forth in claim 2, wherein:

a pattern causing the light beam having the first wavelength to have the phase shift is formed on one side of a boundary which passes through centers of the light beams passing through the grating and is substantially parallel to a track direction of the optical disc; and

a pattern causing the light beam having the second wavelength to have the phase shift is formed on both sides of the boundary which passes through the centers of the light beams passing through the grating and is substantially parallel to the track direction of the optical disc.

5. The optical pickup as set forth in claim 1, wherein the grating is provided so that a region contributing to a tracking signal detection of the light beam having the first wavelength and a region contributing to a tracking signal detection of the light beam having the second wavelength overlap only partially or do not overlap.

6. The optical pickup as set forth in claim 5, wherein a pattern causing the light beam having the first wavelength to have the phase shift and a pattern causing

the light beam having the second wavelength to have the phase shift are formed within respective beam diameters so that the tracking signal detections have no interaction.

7. The optical pickup as set forth in claim 5, wherein a pattern causing a phase shift between a first boundary and a second boundary is different from a pattern of other region(s) on the grating, the first boundary passing through substantially a center of the light beam having the first wavelength and being substantially parallel to a track direction of the optical disc, and the second boundary passing through substantially a center of the light beam having the second wavelength and being substantially parallel to the track direction of the optical disc.

8. The optical pickup as set forth in claim 7, wherein a first grating pattern and a second grating pattern are alternately provided at even intervals on the grating, the first grating pattern having convexoconcave substantially perpendicular to the track direction of the optical disc, and the second grating pattern having convexoconcave which are shifted from the convexoconcave of the first grating pattern.

9. The optical pickup as set forth in claim 7, wherein a first grating pattern and a second grating pattern are formed only between the first boundary and the second boundary.

10. The optical pickup as set forth in claim 7, wherein the first boundary and the second boundary are identical to each other.

11. The optical pickup as set forth in any one of claims 2 to 10, wherein the grating is integrated in an integrated hologram laser unit.